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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,983	02/15/2002	S. Craig Bergsma	00-50	9225

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EXAMINER

COMBS, JANELL A

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 09/29/2003

3

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Applicati n No.</b>		<b>Applicant(s)</b>	
	10/075,983		BERGSMA, S. CRAIG	
	<b>Examin r</b>		<b>Art Unit</b>	
	Janelle Combs-Morillo		1742	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 15 February 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 15-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12 and 14 is/are rejected.
- 7) ☒ Claim(s) 11, 13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other: _____                                    |

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## DETAILED ACTION

### *Election/Restrictions*

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-14, drawn to method of making a semi-solid member, classified in class 148, subclass 549.
  - II. Claims 15-30, drawn to an aluminum alloy, classified in class 148, subclass 417.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be made by a materially different process such as rheocasting.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

2. During a telephone conversation with Andrew Alexander on August 8, 2003 a provisional election was made without traverse to prosecute the invention of group I, claims 1-14. Affirmation of this election must be made by applicant in replying to this Office action. Claims 15-30 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-10, 12, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Loue et al (US 5,879,478 A).

Loue teaches a process for forming an Al-Si-Cu alloy having a globular microstructure by thixoforming, which involves heating said Al-Si-Cu alloy to a semisolid state and injecting into a mold (column 1 lines 15-21, column 4 lines 46-51), thereby producing a non-dendritic globular structure (column 1 lines 26-27). Loue teaches said Al-Si-Cu alloy preferably comprises (in weight%) 5-6% Si, 3.5-4.5% Cu, <1% Mg, 0.005-0.05% Sr (see claims 1 and 4), which overlaps, or is a close approximation of (with regard to Si), the presently claimed composition ranges in independent claims 1, 12, and 14. Loue does not mention aging at 200-400°F for 1-24 hours (claim 1), solution heating at 800-1000°F for 0.1-12 hours, quenching, and ageing to achieve a certain UTS and YS (claim 12), or providing a T6 temper and achieving a certain UTS and YS (claim 14).

However, Loue teaches that it is known in the art to adjust the strength and/or ductility of Al-Si-Cu-Mg thixoformed alloys (column 3 lines 3-4) by using different heat treatments (column 1 lines 52-54), for example, by applying a T6 temper (column 1 line 57).

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More detail is given in “Aluminum and Aluminum Alloys” concerning conventional heat treatment times and temperatures, and specifically concerning T6 heat treatments, that can be applied to 3xx series alloys. “Aluminum and Aluminum Alloys” teaches that 3xx alloys are typically solution heat treated at temperatures 950-1000°F (see Table 5) for 4-12 hours, quenched to develop supersaturation (p 292, 2<sup>nd</sup> column), and artificially aged at 310-475°F for typically 2-18 hours to achieve a T6 temper (see Table 5). “Aluminum and Aluminum Alloys” teaches quenching most frequently occurs by cold water (p 299, 3<sup>rd</sup> column). “Aluminum and Aluminum Alloys” teaches T6 or T5 heat treatments can be applied (see Table 5). It would have been obvious to one of ordinary skill in the art to perform solution heating, quenching, and aging as taught by “Aluminum and Aluminum Alloys” for the 3xx series alloy taught by Loue, because Loue teaches that it is known in the art to adjust the strength and/or ductility of Al-Si-Cu-Mg thixoformed alloys (column 3 lines 3-4) by using different heat treatments (column 1 lines 52-54), and “Aluminum and Aluminum Alloys” teaches various heat treatments conventionally applied to precipitation hardenable 3xx series alloys to achieve desired mechanical properties (see “Aluminum and Aluminum Alloys”, p 292).

Concerning independent claim 14 (as well as dependent claims 4-6) Loue does not mention the tensile strength, yield strength, or elongation of the Al-Si-Cu alloy processed substantially as set forth above. However, the examiner asserts that where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). “When the PTO shows a sound basis for believing that the products of the applicant and

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the prior art are the same, the applicant has the burden of showing that they are not.” *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Because Loue teaches a process of forming a thixotropic alloy that is a close approximation of the presently claimed alloy composition, then substantially the same mechanical properties, such as UTS, YS, and elongation are expected to be substantially the same as in the present invention. Additionally, Loue teaches that it is known in the art to adjust the strength and/or ductility of Al-Si-Cu-Mg thixoformed alloys (column 3 lines 3-4) by using different heat treatments (column 1 lines 52-54), and therefore the application of different heat treatments is held to be a result effective variable.

Changes in temperature, concentrations, or other process conditions of an old process does not impart patentability unless the recited ranges are critical, i.e. they produce a new and unexpected result. However, said parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Concerning dependent claims 2, 3, as stated above, Loue teaches said alloy contains 0.005-0.05% Sr (see claim 1).

Concerning dependent claims 7-10, the heat treatment taught by the combination of Loue and “Aluminum and Aluminum Alloys” teaches the presently claimed steps (see above).

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*Allowable Subject Matter*

5. Claims 11 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The closest prior art, Loue, does not teach or suggest a method of thixoforming an alloy with 3.9-4.9% Si, complete with the instant ranges of Cu, Mg, etc.

*Conclusion*


6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janelle Combs- Morillo whose telephone number is (703) 308-4757. The examiner can normally be reached Monday through Friday from 7:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached on (703) 308-1146. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

jcm 

September 12, 2003

  
GEORGE WYSZOMIERSKI  
PRIMARY EXAMINER